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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,836	08/11/2001	Toshifumi Tsujino	SOHMEI.NIPPONSHEETGLASS.P	8270

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EXAMINER

BLACKWELL RUDASIL, GWENDOLYN A

ART UNIT PAPER NUMBER

1775

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/928,836	Applicant(s) TSUJINO ET AL.	
	Examiner Gwendolyn A. Blackwell-Rudasill	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 27-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
- 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
- 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION
Second Non-Final

1. Claims 1-29 are pending in the present application. Claims 1-26 are examined on the merits. Claims 27-29 are withdrawn as being drawn to a non-elected invention.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on applications filed in Japan on December 13, 1999 and January 26, 2000. It is noted, however, that applicant has not filed certified copies of H11(99)-352970 and 2000-16860 applications as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 6-7, and 14-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Application Publication no. 11-292568, JP '568.

Regarding claim 1

JP '568 disclose a glass substrate coated with an anti-reflective film (low reflection film) comprising chain silica fine particles and silica of 5-30 wt% based on the weight of said chain silica fine particles, (page 1, section 0006). The silica acts as a binder, (page 2, section 0011).

Art Unit: 1775

The average diameter of the silica fine particles ranges from 10-20 nm with an average length of 60-200 nm, (page 2, section 0013). The silica fine particles are preferably used in the form of a sol wherein the particle containing coating solution is comprised of the silica fine particles, a solvent, water, and a hydrolysable organosilicon compound (binder), (pages 3-4, sections 0019-0020). The coating solution is made by mixing the organosilicon compound, the chain silica particles, solvent, and water, then putting coating the solution on a substrate wherein the particles can be added before hydrolysis of the binder, (pages 5-6, sections 0032-0034), meeting the requirements of claim 1.

Regarding claims 2-3, 6-7 and 14-16

The hydrolysable organosilicon compound can be silicon alkoxide, (page 4, section 0024) meeting the requirements of claim 2. The silicon compound can be present in an amount of 100 parts by weight and the silica fine particles are present in an amount ranging from 100-800 parts by weight, (page 5, section 0033, Table 1), meeting the requirements of claim 3. The average diameter of the silica fine particles ranges from 10-20 nm with an average length of 60-200 nm, (page 2, section 0013), meeting the requirements of claims 6-7. The coating has a thickness of 110-250 nm which covers the silica particles by at least 100 nm and a surface roughness of 5-50 nm (corresponding to 2-9% coverage of particles by binder), (page 1, section 0006 and Claim 4), meeting the requirements of claims 14-16.

Regarding claims 17-18

After spreading the coating solution on the substrate, the coating is heated to 200°C or more, (page 6, section 0038), meeting the requirements of claim 17. The coating can have a

Art Unit: 1775

surface roughness ranging from 5-50 nm, (Claim 4), as measured using an atomic force microscope (AFM), (page 3, section 0015), meeting the requirements of claim 18.

Regarding claim 19

The first embodiment comprises the limitations set forth for claim 1 above. In particular, the coating contains 670 parts by weight of silica fine particles, water, catalyst, and solvent against 100 parts by weight of silicon compound, (pages 6-7 section 0044). The reflectivity for the coating at an incident angle of 12° is 0.8, (page 8, section 0054, Table 3), meeting the requirement of claim 19.

The reflectivity is measured using a MCPD-1000 spectrophotometer, which is being held as an equivalent to the JIS-Z8720 system used by Applicant. Absent an evidentiary showing to the contrary that the reflectivity value determined by JP '568 is not equivalent to that set forth in claim 19, the addition of the JIS-Z8720 limitation to the claim does not provide patentable distinction over the prior art of record.

Regarding claims 20-22

The coating solution is suitable for use as a window as an automobile, (page 1, section 0001). Applicant discloses that the haze value for an automobile window must be low from a safety standpoint. Because JP '568 disclose the antireflection film composition as set forth in claim 1 and the JP '568 film is used on an automobile window, it would be expected that the haze value of the coated glass would be extremely low in order that a driver could see out of the window in a safe fashion. Absent an evidentiary showing to the contrary, the addition of the haze value to claims 20-22 do not provide patentable distinction over the prior art of record, meeting the requirements of claims 20-22.

Art Unit: 1775

Regarding claims 23-25

The coating solution is suitable for use as a window as an automobile, (page 1, section 0001), meeting the requirements of claim 23.

The phrase “wherein said low reflection glass article is a building window, show window, display glass sheet or optical glass member” is considered a statement of intended use. The phrase “wherein said low reflection glass article is a solar cell glass sheet or solar water heater glass sheet” is considered a statement of intended use. The intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure, which is an antireflection glass sheet with an antireflection film, is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Because the glass sheet coated with the antireflection film of JP ‘568 is not structurally different from the low reflection glass substrate coated with a low reflection film as claimed by Applicant, the low reflection glass article as claimed does not provide a patentable distinction over the prior art of record, meeting the requirements of claims 24-25.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1775

6. Claims 1-10, 12-13, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Patent Application Publication no. 01/65612, WO '612.

Regarding claim 1

WO '612 disclose an antireflection control film (low reflection film) disposed on a transparent substrate, such as glass, wherein the film contains particles having a mean particle size of 0.01-1.0 μm (10-1000 nm), (abstract). The antireflection film is comprised of fine particles and a binder wherein the binder is comprised of at least one metal alkoxide, (page 9, lines 5-11). The coating solution for the antireflection layer is made by hydrolyzing the metal compound in the presence of the silica fine particles, (page 5, lines 17-27). Sample 4 demonstrates that silica fine particles having an average particle diameter of 0.1 μm are present in a coating ratio 95%, (page 17, Table 2, lines 8-10). WO '612 does not specifically disclose the amount of binder present in the antireflection film.

WO '612 discloses that the weight of the binder is not more than that of the silica fine particles and that there is no limitation on the amount of binder, (page 9, lines 32-34). Absent a showing of criticality with respect to the amount of binder (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the amount of binder through routine experimentation in order to achieve an antireflective film "has an uneven surface derived from the shapes of the fine particles", (page 9, lines 34-35). It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Art Unit: 1775

Regarding claims 2-3 and 6-7

The hydrolysable metal compound can be a metal alkoxide selected from silicon, aluminum, titanium, zirconium, and tantalum which when hydrolyzed will form the oxide of the aforementioned metals, (page 9, lines 1-7), meeting the requirements of claim 2. Sample 5 demonstrates that the silica fine particles have a coating ratio of 72%, (page 17, Table 2, lines 8-10), meeting the requirements of claim 3. The fine particles can have a diameter of a mean particle size of 0.01-1.0 μm (10-1000 nm), (page 7, lines 23-34), meeting the requirements of claims 6-7.

Regarding claims 4-5

WO '612 does not specifically disclose the long axis length to short axis length ratio or the standard deviation of the primary particle size.

Absent a showing of criticality with respect to the particle ratio and standard deviation of the particle size (result effective variables), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the particle ratio and standard deviation of the particle size through routine experimentation in order to the desired optical characteristics of the antireflection film without a large degree of variance among the particle size which would degrade the function of the antireflective film. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), meeting the requirements of claims 4-5.

Regarding claim 8 and 13

In addition to the silica fine particles, a second type of silica fine particles can be added to the antireflection film. The second type has a particle diameter of 0.2-0.8 μm (200-800 nm).

Art Unit: 1775

When the second type of fine particles is present the first fine particle has an average particle diameter of 0.05-0.15 μm (50-150 nm), which can have an average particle size at least 100 nm smaller than the average particle size of the second type of silica particles. If the second type is present, it is present in an amount of at least 30% of the area of the fine particles, (page 8, lines 18-30), meeting the requirements of claim 8.

Less than 50% of the surface area is covered by the second type of silica fine particles as the lower limit for the second type to be present is 30% which would have the first type present at 70% which is consistent with the data of Table 2, meeting the requirements of claim 13.

Regarding claims 9-10

WO '612 does not specifically disclose the amount of fine particles that would be present in a 1 μm x 1 μm or a 10 μm x 10 μm square area of the surface are a of the film as seen from above the film.

Because WO '612 disclose the particular type of particle and the average diameters of the silica fine particles as claimed by Applicant, it would be expected that the amount of fine particles present in a specific surface are would also fall within the ranges claimed by Applicant, meeting the requirements of claims 9-10.

Regarding claim 12

WO '612 does not specifically disclose the thickness of the antireflective layer.

Absent a showing of criticality with respect to the thickness (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the thickness through routine experimentation in order to achieve an antireflective film that suppresses the reflection from the transparent substrate thereby improving the photoelectric

Art Unit: 1775

conversion efficiency. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In *re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), meeting the requirements of claim 12.

Regarding claims 23-26

WO '612 meet the limitations as set forth above with regards to claim 1. In addition, WO '612 disclose that the glass used for the substrate is float glass, (page 15, lines 1-6), and that it can have a transmittance of greater than 85%, (page 16, Table 1, lines 7-9).

The phrase "wherein said low reflection glass article is an automobile window" is considered a statement of intended use. The phrase "wherein said low reflection glass article is a building window, show window, display glass sheet or optical glass member" is considered a statement of intended use. The phrase "wherein said low reflection glass article is a solar cell glass sheet or solar water heater glass sheet" is considered a statement of intended use. The intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure, which is an antireflection glass sheet with an antireflection film, is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Because the glass sheet coated with the antireflection film of WO '612 is not structurally different from the low reflection glass substrate coated with a low reflection film as claimed by Applicant, the low reflection glass article as claimed does not provide a patentable distinction over the prior art of record, meeting the requirements of claims 23-26.

Response to Arguments

7. Applicant's arguments, see pages 11-12, filed May 27, 2004 with respect to the rejection(s) of claim(s) 1-3 under Taniguchi et al have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of International Patent Application Publication no. 01/65612.

8. Applicant's arguments filed May 27, 2004 have been fully considered but they are not persuasive.

Applicant contends that Japanese Patent Application Publication no. 11-292568, JP '568 "does not disclose that a hydrolysable metal compound is hydrolyzed in the presence of silica fine particles but rather teaches that organosilicon compounds are first hydrolyzed and then a dispersion chain-like silica particle are added to this hydrolyzed solvent."

JP '568 specifically teaches that the coating solution is made by mixing the organosilicon compound, the chain silica particles, solvent, and water, then putting coating the solution on a substrate wherein the particles *can be added before hydrolysis* [emphasis added] of the binder, (pages 5-6, sections 0032-0034).

9. For the reasons set forth above the rejection under JP '568 stands.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn A. Blackwell-Rudasill whose telephone number is

Art Unit: 1775

(571) 272-1533. The examiner can normally be reached on Monday - Thursday; 5:30 am - 4:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gwendolyn A. Blackwell-Rudasill
Examiner
Art Unit 1775



gbr



ARCHENETURNER
PRIMARY EXAMINER